

FIG.1(Prior Art)

ACT: Active Command
 Write: Write Command
 Read: Read Command
 PRE: Pre-Charge Command
 tRCD: RAS₋ to CAS₋ delay time
 tRCDmin: minimum time for tRCD
 tRP: RAS pre-charge time
 tRPmin: minimum time for tRP
 tRC: Command Period
 tRCmin: minimum time for tRC

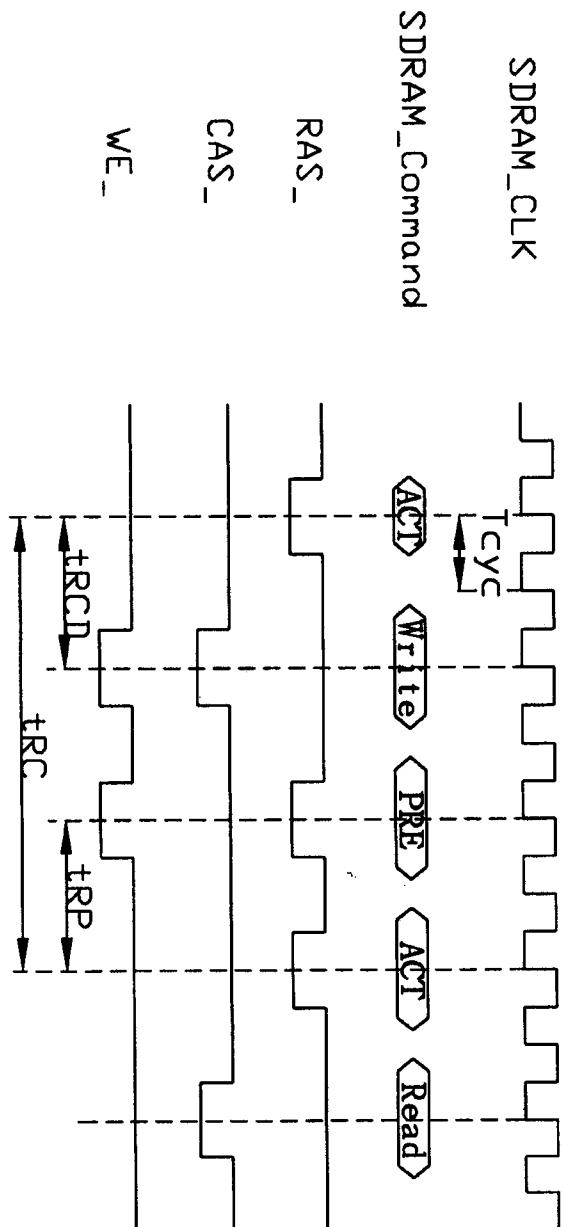


FIG. 2 (Prior Art)

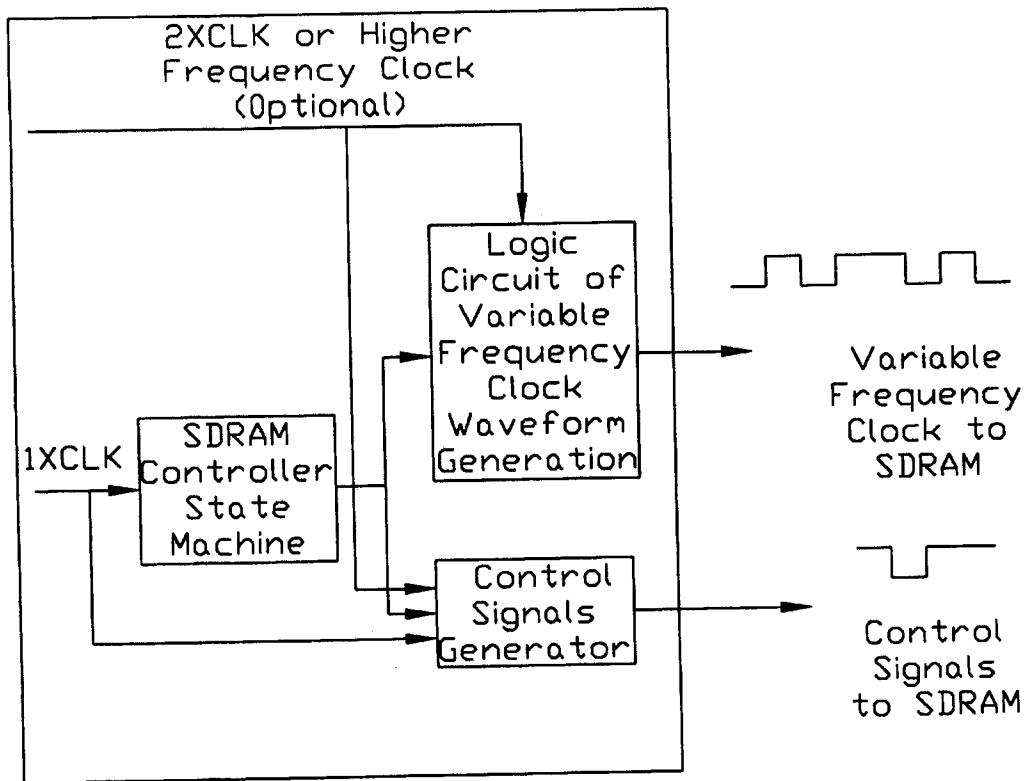


FIG.3

ACT: Active Command
 Write: Write Command
 Read: Read Command
 PRE: Pre-Charge Command
 tRCD: RAS_to CAS_delay time
 tRCDmin: minimum time for tRCD
 tRP: RAS pre-charge time
 tRPmin: minimum time for tRP
 tRC: Command Period
 tRCmin: minimum time for tRC

$tRCD = 2 * T_{Cyc}$
 $tRCD_{min} = 1.4 * T_{Cyc}$
 $tRP = 2 * T_{Cyc}$
 $tRP_{min} = 1.4 * T_{Cyc}$
 $tRC = 6 * T_{Cyc}$
 $tRC_{min} = 5 * T_{Cyc}$

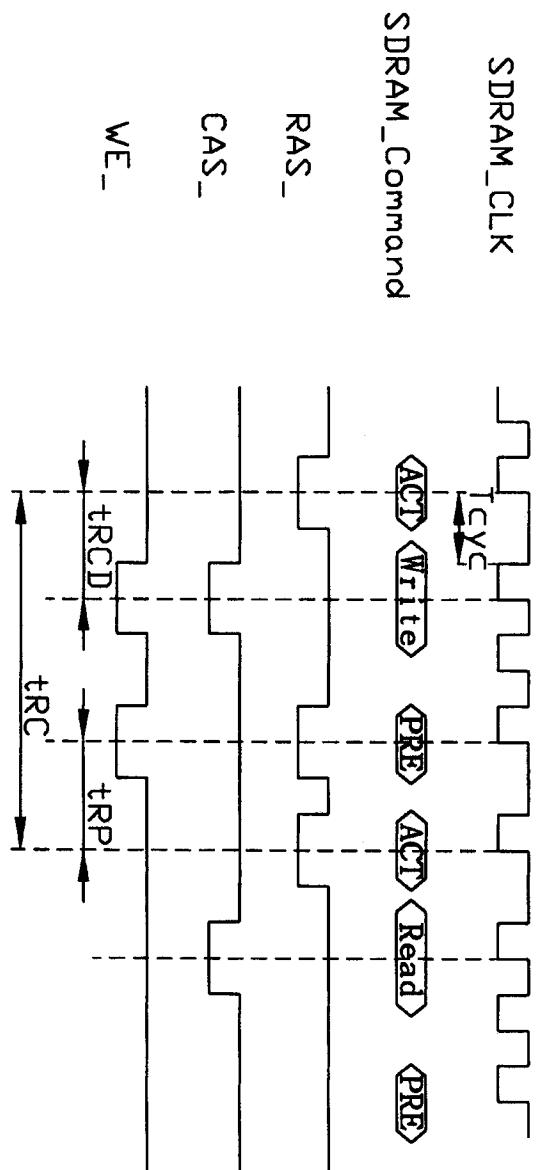


FIG. 4